

Amendments to the Specification:

Please replace the paragraph on page 4, lines 8-13 with the following amended paragraph:

A device in accordance with one of the inventions herein includes an apparatus that consumes electrical power, a fuel cell and a reaction chamber including an inlet adapted to be connected to a fuel source, a catalyst, and a fuel outlet connected to the fuel cell. The reaction chamber may, for example, be adapted to produce gaseous fuel from a fuel containing substance. This allows the device to be used in combination with fuel cartridges which do not have their own catalyst chambers.

Please replace the paragraph on page 4, line 28 to page 5, line 7 with the following amended paragraph:

As illustrated for example in Figure 1, an exemplary fuel cartridge 100 includes a fuel reservoir 102 that stores a fuel containing substance FCS, a reaction chamber 104 that stores a catalyst, and a ~~bi-product~~ byproduct reservoir 106 that stores the ~~bi-product~~ byproduct BP of the reaction that occurs within the reaction chamber. The fuel containing substance FCS is supplied to the reaction chamber 104 by way of ~~a inlet~~ an inlet line 108, while the ~~bi-product~~ byproduct BP is transferred to the ~~bi-product~~ byproduct reservoir 106 by way of an outlet line 110. The inlet and outlet lines 108 and 110 are preferably tubular structures that define open regions through which the fuel containing substance FCS and ~~bi-product~~ byproduct BP flow. The fuel F and ~~bi-product~~ byproduct BP may be separated from one another within the reaction chamber 104 in any suitable manner including, for example, the manner described below with reference to Figure 9. A cartridge housing 112 is also provided to protect the fuel reservoir 102, reaction chamber 104 and a ~~bi-product~~ byproduct reservoir 106, and to protect the host device from any leakage therefrom.

Please replace the paragraph on page 5, lines 22-32 with the following amended paragraph:

The exemplary fuel reservoir 102, reaction chamber 104, ~~bi-product~~ byproduct reservoir 106 and cartridge housing 112 may be formed from any suitable material or materials. In exemplary embodiments, in which sodium borohydride is used to produce hydrogen gas, the fuel and ~~bi-product~~ byproduct reservoirs 102 and 106 and reaction chamber 104 are each cylindrical in shape and formed from plastics such as polyolefins including, but not limited to, polyethylene and polypropylene. Non-corrosive metals are another material from which the fuel and ~~bi-product~~ byproduct reservoirs 102 and 106 and reaction chamber 104 may be manufactured. The reservoirs 102 and 106 and reaction chamber 104 may also be rectangular in shape. Alternatively, the fuel cartridge may simply include a housing similar to housing 112 and internal partition walls that separate the interior of the housing into a number of distinct chambers.

Please replace the paragraph on page 7, lines 4-7 with the following amended paragraph:

The exemplary ~~bi-product~~ byproduct reservoir 106 may, if desired, include a device that creates a vacuum and draws the ~~bi-product~~ byproduct into reservoir. Suitable vacuum creation devices may include, for example, a spring and pusher arrangement similar to that illustrated in Figure 4, albeit with the spring on the opposite side of the pusher.

Please replace the paragraph on page 10, lines 7-22 with the following amended paragraph:

The exemplary reaction chamber 104 is configured such that the orientation of the reaction chamber will not hinder the release of gaseous fuel (hydrogen in the illustrated implementations). Turning to Figure 9, the exemplary reaction chamber 104 includes ~~a external~~ an external housing 178, which has a fuel containing

substance inlet 179 and a ~~bi-product~~ byproduct outlet 181, and an internal reaction region 180 that is bounded by a gas permeable/liquid impermeable catalyst housing 182. Suitable gas permeable/liquid impermeable materials for the catalyst housing 182 include porous hydrophobic membrane materials such as, for example, GORE-TEX® material and CELGARD® hollow fiber membrane material. A catalyst consisting of, for example, one or more catalyst members is positioned within the catalyst housing 182 for reaction with the fuel containing substance. Preferably, the catalyst is in the form of a plurality of porous carbon beads 184 that are coated with catalyst material. The catalyst housing 182 is also provided with an inlet opening 186 and an outlet opening 188 that are each sealed with a gasket 190. The inner diameter of the housing 178 is slightly larger than the outer diameter of the catalyst housing 182, thereby creating a relatively small gas collection area 192. A gas outlet 194 allows gas to flow from the gas collection area 192 into the outlet connector 114.

Please replace the paragraph on page 10, line 23 to page 11, line 4 with the following amended paragraph:

With respect to operation of the exemplary reaction chamber 104, the fuel containing substance FCS (sodium borohydride in the illustrated embodiment) enters the catalyst housing 182 by way of the inlet opening 186 and is exposed to the catalyst material (ruthenium in the exemplary embodiment) on the beads 184. Gaseous fuel F and liquid ~~bi-product~~ byproduct BP (hydrogen and sodium borate in the exemplary embodiment) form within the catalyst housing 182. As gas pressure builds, the gaseous fuel F will pass through the catalyst housing 182 into the gas collection area 192 and, ultimately, exit the reaction chamber 104 by way of the gas outlet 194. The hydrophobic catalyst housing 182 will not, however, allow the liquid ~~bi-product~~ byproduct BP to pass. The liquid ~~bi-product~~ byproduct BP will instead exit the catalyst housing by way of the outlet 188, and then flow through the outlet line 110 to the ~~bi-product~~ byproduct reservoir 106. Because the present reaction chamber 104 relies on internal pressure and/or an external vacuum created by a pump such as pump 118 in

Figure 3, as opposed to gravity, to separate the gas from the liquid and evacuate the gas, the present reaction chamber will operate regardless of orientation.

Please replace the paragraph on page 12, lines 1-12 with the following amended paragraph:

The exemplary PDA 200 is powered by a fuel cell stack 216 consisting of one or more cells 218. Although the present inventions are not limited to any particular type of fuel cell system, the exemplary fuel cells 218 are PEM fuel cells. As is known to those of skill in the art, each cell 218 in the PEM fuel cell 216 stack includes an anode 220 and a cathode 222 separated by a PEM 224. Fuel, such as hydrogen, is supplied to the anode 220 and oxygen supplied to the cathode 222. In the illustrated embodiment, oxygen may be supplied to the fuel cell stack 216 by drawing ambient air into the stack through a vent in the PDA housing. A fan may be provided to facilitate this process. The fuel is electrochemically oxidized at an anode catalyst, thereby producing protons that migrate across the conducting PEM 224 and react with the oxygen at a cathode catalyst to produce a ~~bi-product~~ byproduct (water vapor and nitrogen in the exemplary embodiment) which carried away from the fuel cell stack 216 by a manifold and vented out of the PDA housing.

Please replace the paragraph on page 12, line 30 to page 13, line 10 with the following amended paragraph:

Another exemplary fuel cell powered PDA, which is generally represented by reference numeral 200', is illustrated in Figure 11. PDA 200' is substantially similar in structure and operation to the PDA 200 illustrated in Figure 10 and similar elements are illustrated by similar reference numerals. Here, however, the PDA 200' (or other host device) is provided with a catalyst chamber 104 and a porous structure 128. A fuel cartridge 228, which includes a fuel reservoir 102 for storing a fuel containing substance and a ~~bi-product~~ byproduct reservoir 106 for storing a ~~bi-product~~ byproduct, may be connected to the PDA 200' by a pair of connectors 114 which mate with corresponding connectors 116 on the PDA. The fuel reservoir 102 will be

connected to the catalyst housing inlet opening 186 (Figure 9) by way of the porous structure 128, while the ~~bi-product~~ byproduct reservoir 106 will be connected to the catalyst housing outlet opening 188 (Figure 9), when the fuel cartridge 228 is connected to the PDA 200'. The catalyst chamber 104 and a porous structure 128 operate in the respective manners described above.

Please replace the paragraph on page 13, lines 15-23 with the following amended paragraph:

Although the present inventions have been described in terms of the preferred embodiments above, numerous modifications and/or additions to the above-described preferred embodiments would be readily apparent to one skilled in the art. By way of example, but not limitation, the various components of the exemplary fuel cartridges described above may be interchanged. Fuel cartridges in accordance with the present inventions may also include a fuel cell ~~bi-product~~ byproduct reservoir to store ~~bi-product~~ byproduct from the operation of the fuel cell in those instances where it is not practicable to vent the ~~bi-product~~ byproduct out of the host device. It is intended that the scope of the present inventions extend to all such modifications and/or additions.